

U.S. Patent Application No. 09/995,888
Amendment dated May 3, 2004
Reply to Office Action dated February 2, 2004

REMARKS/ARGUMENTS

Reconsideration and continued examination of the above-identified application are respectfully requested.

The amendment to the specification updates the information by inserting the missing U.S. patent application number. The amendment to the claims is editorial in nature. Full support for the amendment can be found throughout the present application, including the claims as originally filed. Accordingly, no questions of new matter should arise, and entry of the amendment is respectfully requested.

Claims 1-30 are pending in the application.

At page 2 of the Office Action, the Examiner objects to the specification. The Examiner asserts that the specification, at page 6, line 17, is missing a patent application number. For the following reasons, this objection is respectfully traversed.

The specification, at page 6, lines 16-18, now includes the application number for the co-pending application. Accordingly, this objection should be withdrawn.

At page 2 of the Office Action, the Examiner objects to claims 1, 10, 12-14, and 18-21. The Examiner states that claims 9 and 10 are method claims that are dependent on apparatus claims. Furthermore, the Examiner states that claims 12-14 and 18-21 are apparatus claims that are dependent on method claims. Additionally, the Examiner objects to claim 17. The Examiner states that claim 17 is dependent on itself. For the following reasons, this objection is respectfully traversed.

Claims 9 and 20 of the present application recite a method of filtering a fluid, including circulating the fluid through the system of claims 8 and 19, respectively. Therefore, these claims properly refer to claims 8 and 19. There are numerous patents that use this claim format. Also, see

U.S. Patent Application No. 09/995,888
Amendment dated May 3, 2004
Reply to Office Action dated February 2, 2004

MPEP §2173.05(f) which permits this claim format. The claims are clear to one skilled in the art and satisfy §112.

Claims 10 and 21 recite, in part, the method of preparing the assembly of claims 2 and 13, respectively. Claims 10 and 21 recite the steps involved in assembling the apparatus of claims 2 and 13. Again, these claims are clear and definite under §112 and MPEP §2173.05(f) permits these types of claims.

With respect to claims 12-14, 18, and 19, claim 12 now recites, in part, an assembly including the filter cartridge housing of claim 11. Therefore, claim 12, which is a product claim, is now dependent on another product claim. Claims 13, 14, 18, and 19 are product claims and are dependent, directly or indirectly, on claim 12. Additionally, claim 17 is now appropriately dependent on claim 1. Accordingly, for the reasons set forth above, this objection should be withdrawn.

At the bottom of page 2 of the Office Action, the Examiner rejects claims 1-21 under 35 U.S.C. §103(a) as being unpatentable over Taylor (U.S. Patent No. 6,274,103 B1) in view of Raabe et al. (U.S. Patent No. 5,489,385). According to the Examiner, Taylor describes a filter cartridge assembly having a tubular housing and a plurality of filter and media sections. According to the Examiner, the cartridge of Taylor also includes a first connector sealing the first end of the tubular housing, a second connector sealing the second end of the tubular housing, and a fluid circulating device. The Examiner further asserts that Taylor states that the tubular housing includes a plastic material such as polypropylene material. Furthermore, the Examiner states that the assembly of Taylor includes a dialysate fluid. The Examiner indicates that Taylor differs from the claimed invention because the claimed invention includes a tubular housing having a gradually decreasing cross-section. However, the Examiner states that Raabe et al. describes a tubular housing for a filter

U.S. Patent Application No. 09/995,888
Amendment dated May 3, 2004
Reply to Office Action dated February 2, 2004

cartridge of a dialysate fluid having a gradual decreasing cross-section. Thus, the Examiner concludes that it would have been obvious to a person having ordinary skill in the art, at the time the invention was made, to provide a gradually decreasing tubular housing as taught by Raabe et al. for the housing of Taylor. For the following reasons, this rejection is respectfully traversed.

Claim 1 of the present application recites, in part, a tubular housing having at least three sections wherein each section includes an average inner diameter that is smaller than its previous section. Additionally, at the intersection of each section, the tubular housing includes a shoulder. According to claim 1, the tubular housing also includes a plurality of filter media sections, wherein the first filter media section has a length in a direction from the first end to the second end that includes at least portions of at least two of the lengths of the inner wall sections such that the first media section traverses at least one of the shoulders.

Claim 11 of the present application recites a filter cartridge that includes a first annular flow director extending radially inwardly from the inner wall of the tubular housing at the intersection of the first section and the second section, and a second annular flow director extending radially inwardly from the inner wall at the intersection of the second section and the third section. Additionally, the tubular housing of claim 11 includes a conical shape. See for instance, Figure 1 which shows the decreasing diameters of each section and also shows shoulders 120, 122, 124, and 126. These are not shown in the cited art. The advantages of this system are described in the present application and includes avoiding wicking.

Taylor relates to an apparatus and a method for preparation of a peritoneal dialysis solution. Taylor primarily works on the well known brine generation principle, wherein a dry granular or crystalline salt, such as sodium chloride or sodium bicarbonate, etc., is packed into a container that has a particulate filter in at least the exit end, and water is passed through the salt bed. The salt

U.S. Patent Application No. 09/995,888
Amendment dated May 3, 2004
Reply to Office Action dated February 2, 2004

dissolves in the water up to the solubility product and the brine exits the container through the filter, which prevents the undissolved salt from exiting the container. The invention of Taylor combines several salts, some of them partially incompatible, into a single housing using simple filter separators between the layers.

Taylor does not teach or suggest a housing having at least three sections wherein each section includes an average inner diameter that is smaller than its previous section.

Further, the device of Taylor only requires water contact with enough of the un-dissolved salt to achieve saturation. Taylor also relies only on back pressure and compacting of the chemical layers as the salts dissolve to achieve sufficient contact. Taylor makes no references to potential wicking problems associated with its invention. Taylor does not teach or suggest having shoulders or annular flow directors at the intersection of each section to eliminate or reduce any wicking problems and/or promote laminar flow. Additionally, Taylor does not teach or suggest a filter media section that includes a length in a direction from the first end to the second end that includes at least portions of at least two of the lengths of the inner wall sections, such that the first media section traverses at least one of the shoulders.

Raabe et al. relates to a drip chamber and/or an expansion chamber with an integral filter. Raabe et al. simply provides a chamber that is wider in diameter than the in-feed and out-feed blood tubing to slow the flow velocity, to reduce the air to blood interface with sufficient head space and fill space, and to provide a safe transition buffer volume for air bubbles to escape the blood. The filter of Raabe et al., in addition to removing air, also removes clots.

The chamber of Raabe et al., however, is not conical in shape. Conical is defined as resembling a cone-shaped figure. The side walls of the chamber illustrated in Raabe et al. are parallel to each other. Therefore, the chamber of Raabe et al. is not conical in shape as suggested by

U.S. Patent Application No. 09/995,888
Amendment dated May 3, 2004
Reply to Office Action dated February 2, 2004

the Examiner. Raabe et al. does not teach or suggest having shoulders or annular flow directors at the intersection of each section to eliminate or reduce any wicking problems and/or promote laminar flow. The design features of the present claims are simply not taught or suggested in the cited references. Accordingly, the combination of Taylor and Raabe et al. does not teach or suggest the claimed invention. Accordingly, this rejection should be withdrawn.

At page 4 of the Office Action, the Examiner rejects claims 22-30 under 35 U.S.C. §102(e) as being anticipated by Taylor. The Examiner again asserts that Taylor describes a filter cartridge assembly having a tubular housing with cylindrical shape of a constant inner diameter and a plurality of filter media sections, a first connector sealing the first end of the tubular housing, a second connector sealing the second end of the tubular housing, and a fluid circulating device. The Examiner further states that Taylor describes a tubular housing which includes a plastic material, such as polypropylene. According to the Examiner, the assembly of Taylor includes a dialysate fluid. For the following reasons, this rejection is respectfully traversed.

Claim 22 of the present application recites, in part, a filter cartridge housing including a tubular housing having a cylindrical shape, a first annular flow director extending radially inwardly from the inner wall of the tubular housing at the intersection of the first section and the second section, and a second annular flow director extending radially inwardly from the inner wall at the intersection of the second section and the third section. Claim 22 also recites a first filter media, wherein the first filter media section has a length in a direction from the first end to the second end that includes at least portions of at least two of the lengths of the inner wall sections, such that the first media section traverses at least one of the first and second annular flow directors.

Taylor simply does not teach or suggest a first annular flow director extending radially inwardly from the inner wall from the tubular housing at the intersection of the first section and the

U.S. Patent Application No. 09/995,888
Amendment dated May 3, 2004
Reply to Office Action dated February 2, 2004

second section, and a second annular flow director extending radially inwardly from the inner wall at the intersection of the second section and the third section. To assist the Examiner, an example of an annular flow director is shown in Figures 2 and 3, e.g., see 220, 222, 224, 226, or 326, 324, 322, 320. None of the figures or description of Taylor shows such devices. The figures and numerals referred to by the Examiner simply do not show any annular flow directors. Furthermore, Taylor does not teach or suggest a filter media section that includes a length in a direction from the first end to the second end that includes at least portions of at least two of the lengths of the inner wall sections, such that the first media section traverses at least one of the first and second annular flow directors. Accordingly, this rejection should be withdrawn.

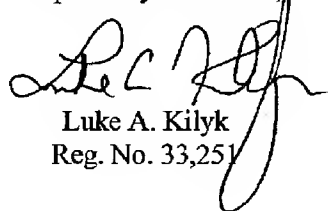
If the Examiner has any questions regarding the differences between the cited art and the claimed invention, the Examiner is encouraged to contact the undersigned by telephone.

CONCLUSION

In view of the foregoing remarks, the applicant respectfully requests the reconsideration of this application and the timely allowance of the pending claims.

If there are any other fees due in connection with the filing of this response, please charge the fees to Deposit Account No. 50-0925. If a fee is required for an extension of time under 37 C.F.R. § 1.136 not accounted for above, such extension is requested and should also be charged to said Deposit Account.

Respectfully submitted,



Luke A. Kilyk
Reg. No. 33,251

U.S. Patent Application No. 09/995,888
Amendment dated May 3, 2004
Reply to Office Action dated February 2, 2004

Atty. Docket No. 3192-001
KILYK & BOWERSOX, P.L.L.C.
53 A East Lee Street
Warrenton, VA 20186
Tel.: (540) 428-1701
Fax: (540) 428-1720